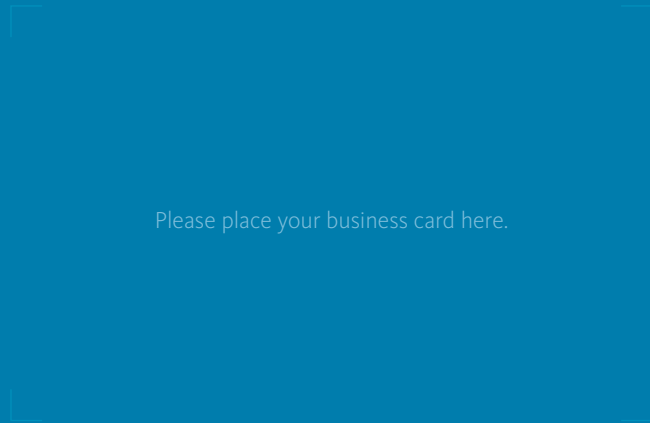


General Contact

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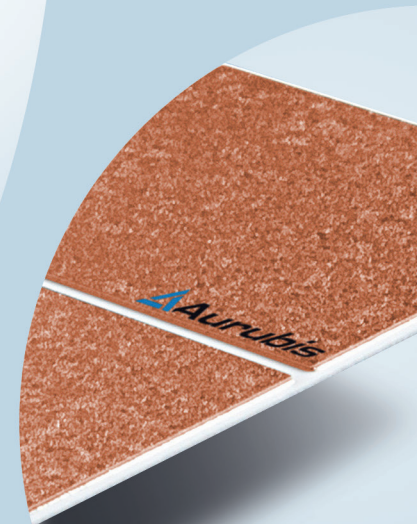
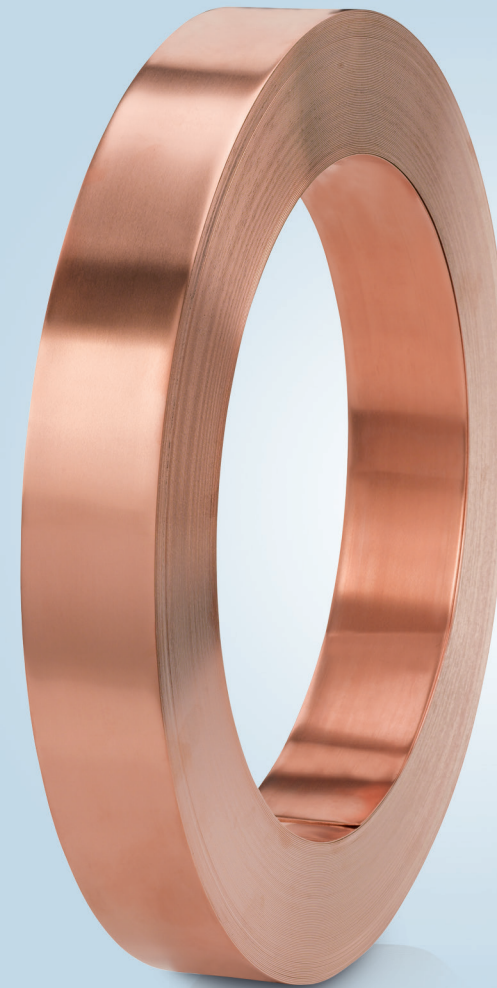
Your Contact



Please place your business card here.

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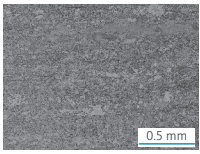
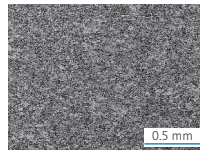
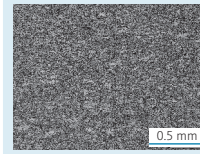
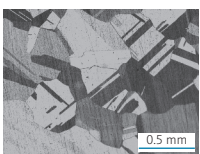
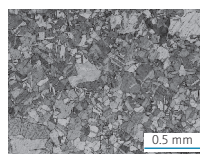
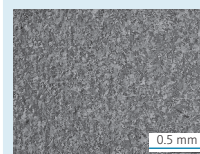
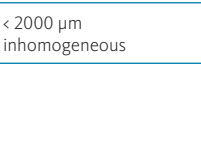
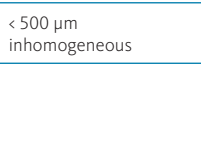
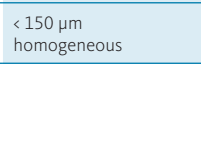
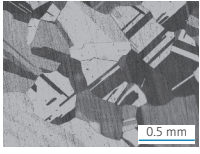
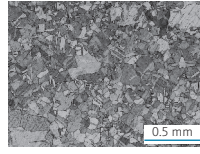
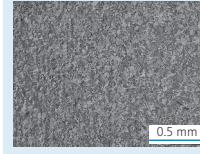
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Copper Solutions
for Copper-Ceramic Substrates



Copper-ceramic substrates based on Al_2O_3 , AlN and Si_3N_4 ceramics produced by Direct Copper Bonding (DCB) or Active Metal Brazing (AMB) are preferred and established solutions in power electronic applications. Unique attributes of copper-ceramic substrates are thick solid copper layers for high current carrying capacity, high thermal conductivity, and a low coefficient of thermal expansion.

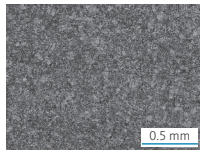
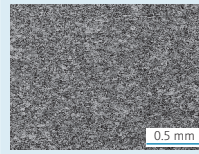
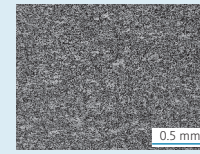
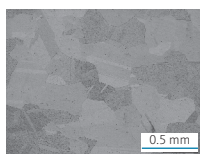
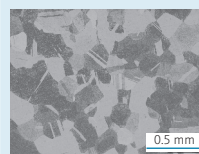
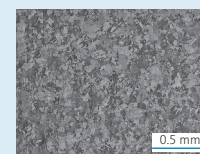
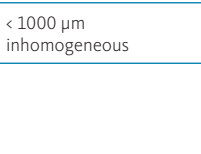
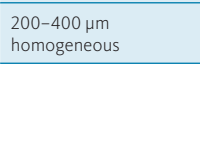
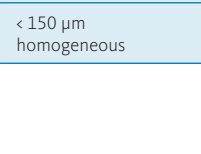
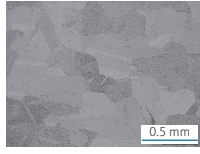
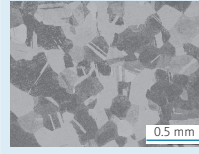
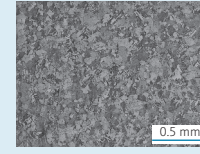
Solutions for bonding processes (DCB)				
Alloy name		ETP	OFE	Aurubis DCuB2 / PNA 402 *
UNS		C110	C101	C101
Melting point	Liquidus temperature	1083°C	1083°C	1083°C
	Solidus temperature	1065°C	1083°C	1083°C
Density		8.93 g/cm ³	8.93 g/cm ³	8.93 g/cm ³
Heat capacity at 20°C		0.386 J/gK	0.390 J/gK	0.390 J/gK
Thermal conductivity at 20°C		394 W/mK	394 W/mK	394 W/mK
Electrical conductivity at 20°C		101 % IACS	101 % IACS	101 % IACS
Coefficient of thermal expansion at 20–300°C		17.3 10 ⁻⁶ ·K ⁻¹	17.7 10 ⁻⁶ ·K ⁻¹	17.7 10 ⁻⁶ ·K ⁻¹

Microstructure after bonding process T > 1050°C						
Alloy name		ETP	OFE	Aurubis DCuB2 / PNA 402 *		
UNS		C110	C101	C101		
Microstructure before bonding						
						
						
Microstructure after bonding						
Grain size after bonding		< 2000 µm inhomogeneous	< 500 µm inhomogeneous	< 150 µm homogeneous		

* including special processing

For this application Aurubis provides dedicated copper strip products which fulfill the special requirements of the utilized bonding and brazing processes. These strips are produced in a special process at Aurubis Pori (Finland) and Aurubis Stolberg (Germany). Furthermore, Aurubis is constantly working to improve the properties of these specialty products and to adapt the material behavior to customers' process conditions.

Solutions for brazing processes (AMB)				
Alloy name		PHC	Aurubis PNA 404	Aurubis DCuB1
UNS		C103	C101	C101
Melting point	Liquidus temperature	1083°C	1083°C	1083°C
	Solidus temperature	1083°C	1083°C	1083°C
Density		8.94 g/cm ³	8.93 g/cm ³	8.93 g/cm ³
Heat capacity at 20°C		0.385 J/gK	0.390 J/gK	0.390 J/gK
Thermal conductivity at 20°C		385 W/mK	394 W/mK	394 W/mK
Electrical conductivity at 20°C		100 % IACS	101 % IACS	101 % IACS
Coefficient of thermal expansion at 20–300°C		17.6 10 ⁻⁶ ·K ⁻¹	17.7 10 ⁻⁶ ·K ⁻¹	17.7 10 ⁻⁶ ·K ⁻¹

Microstructure after brazing process T < 1000°C (vacuum)						
Alloy name		PHC	Aurubis PNA 404	Aurubis DCuB1		
UNS		C103	C101	C101		
Microstructure before brazing						
						
						
Microstructure after brazing						
Grain size after brazing		< 1000 µm inhomogeneous	200–400 µm homogeneous	< 150 µm homogeneous		

* including special processing